

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

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Date: April 27, 1979

Project Title: Industrial Energy Extension Service

Project No: A-2362

Project Director: W. G. Moran

Sponsor: Georgia Office of Energy Resources

Agreement Period: From 4/1/79 Until 12/31/79

Type Agreement: Contract Dtd. 4/1/79

Amount: \$388,662 (Includes sub-projects E-18-619 \$12,595
E-19-681 \$23,772
E-27-678 \$21,435)

Reports Required: Monthly Financial and Progress Reports

Sponsor Contact Person (s):

Technical Matters

Contractual Matters

(thru OCA)

Mr. Ed Bistany
Georgia Office of Energy Resources
270 Washington Street
Atlanta, Georgia 30334

Defense Priority Rating: N/A

Assigned to: Technology & Development Laboratory (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director-EES
Accounting Office
Procurement Office
☒ Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
EES Reports & Procedures
Project File (OCA)
Project Code (GTRI)
Other _____

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GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT TERMINATION

Date: 6/6/80

Project Title: Industrial Energy Extension Service

Project No: A-2362

Project Director: W. G. Moran

Sponsor: Georgia Office of Energy Resources

Effective Termination Date: 12/31/79

Clearance of Accounting Charges: 12/31/79

Grant/Contract Closeout Actions Remaining:

- ☐ Final Invoice and Closing Documents
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☒ Other Following unexpended balances to be transferred to A-2362

E-18-619	\$299.58
E-19-681	320.18
E-27-678	81.78

TOTAL \$701.54

Assigned to: TAL/ECD (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director-EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
Project File (OCA)
Project Code (GTRI)
Other _____



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

July 6, 1979

Mr. Ed Bistany
Georgia Office of Energy Resources
Trinity-Washington Building
270 Washington Street
Atlanta, Georgia

Subject: Industrial Energy Extension Program
Quarterly Progress Summary Report for
EES/GIT Research Project A-2362 for
Period 1 April 1979 through
30 June 1979

Dear Mr. Bistany:

This summarizes activities on Research Project A-2362 for the second quarter of 1979.

Program Goals for the Quarter

1. Develop and document case studies and special reports on specific technology areas as scheduled.
2. Continue technical assistance program and industrial energy audits as requested.
3. Develop programs and material for workshops and conferences as scheduled.
4. Conduct 5 workshops as follows:
 - A. Emerging Energy Technologies, Macon, May 3, 1979
 - B. Textile Batch Processes, Atlanta, May 8, 1979
 - C. Solid Fuels Technology, Atlanta, May 15, 1979
 - D. Emerging Energy Technologies, Atlanta, June 19, 1979
 - E. Solid Fuels Technology, Columbus, June 26, 1979.
5. Continue marketing activities for augmentation of IEES program, i.e., Southern Solar, ARC, and TVA.
6. Complete development of Solid Fuels Technology Handbook.
7. Print and mail May issue of Conserver.

Program Accomplishments for the Quarter

1. Statistics by groups:

	<u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemical</u>	<u>Stone</u>
No. of industries contacted:	11	11	1	1	8
No. of plants visited:	6	16	6	0	0
No. of new plants visited to which work has been initiated:	2	4	4	0	1
No. of unsolicited requests:	7	4	2	0	1
No. of reports sent:	5	7	0	1	0
No. of case studies:	4	1	5	0	2

2. Workshop statistics:

- A. As per Table 1 attached.
 - B. Solid Fuels Technology, Columbus, June 26 cancelled as well as Food on December 13. Will try to move to Gainesville or Albany.
3. Began planning work on Boiler Efficiency workshop, July 12, Food Industry workshop, August 15, and Chemical Industry workshop, August 21. Wrote copy of invitational brochures and program, coordinated with appropriate chamber of commerce and with guest speakers.
 4. Completed documentation of 12 case studies.
 5. May issue of Conserver mailed to approximately 5800 industries.
 6. Coordinated with you, three contract development concepts for augmentation of IEES - Solar Augmentation of IEES Program, Energy Audits for Appalachian Regional Commission, and IEES extension into the T.V.A. region.
 7. Two abstracts on IEES case studies were submitted to ASME for presentation at their winter meetings. A third case study "Energy Conservation in the Distillation of Wood Chemicals" was published in the May issue of "Southern Pulp and Paper Manufacturer".
 8. An overview of Georgia's IEES program was presented by members of the Textile group at a workshop for the Carpet Manufacturing Association of the West on June 11, 1979. Another presentation "Novel Approaches to Industrial Energy Conservation in Georgia" will be given at the 14th Intersociety Energy Conservation Engineering Conference on August 10, 1979.
 9. Replaced Administrative Specialist J.B. Shaw with Mark Hodges (bio-sketch will be sent when available).
 10. Two articles on textile energy conservation measures were published in the Energy Management section of Textile World magazine.

11. One staff member was asked to be guest speaker on industrial energy conservation at American Institute of Plant Engineers meeting, Augusta section, this fall.
12. One staff member was asked to be a guest speaker on industrial energy conservation at the Cumming, Georgia Rotary Club meeting on August 2, 1979.

Milestones Met During the Quarter

1. Evaluated results of IEES program for second quarter 1979 (see attachment). Actual energy savings by Georgia industry for second quarter was 5.44×10^{12} BTU which gives a year to date savings of 8.88×10^{12} BTU - savings goal for 1979 is 18.0×10^{12} BTU.
2. Presented 4 workshops and documented 12 case studies.
3. Reviewed with you Georgia Tech's reorganization and its effect on O.E.R. programs. (See attached organization chart).


Major Activities


The major emphasis during this quarter continued to be on workshop preparation and case study documentation. Workshop schedules were finalized and four were presented. Chambers of Commerce have been notified, brochures and mailouts were distributed, press releases were issued, public utilities and trade associations were contacted and the participation of outside guest speakers was arranged.

Pertinent industrial energy conservation topics have been identified for case study documentation and personnel have been assigned to research and report on these. Case study write-ups are presented at workshops when appropriate. To date 14 case studies have been completed.

Work has continued on technology transfer, technical assistance, and energy audits as requested from Georgia industries.

Respectfully submitted, .

 William G. Moran
Program Coordinator

 William G. Moran
Division Chief

WGM/rem

Attachments

Table 1 - IEES Workshops Conducted and Evaluated

4/1/79 - 6/30/79 (2nd Quarter 1979)

<u>Location</u>	<u>Workshop Date</u>	<u>Topic</u>	<u>No. of Attendees</u>	<u>Total No. Of SIC Companies Represented</u>	¹ No. of Adjusted SIC Companies, by Industry Group				
					² <u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemicals</u>	<u>Stone, Glass & Clay</u>
Macon	5/3/79	Emerging Energy Technologies	32	18	5/3	-	3/3	-	3/2
Atlanta	5/8/79	Textiles: Batch Dyeing Equipment	53	27	-	-	19/4	-	-
Atlanta	5/15/79	Solid Fuels Technology	25	10	1/0	2/1	1/1	1/1	2/1
TOTALS			110	55	6/3	2/1	23/8	1/1	5/2

¹Adjusted SIC Companies column excludes plants which have received IEES in-plant audits or technical assists.²Convention adopted here is: No. of plants represented / No. of plants contacted by phone for survey.

TABLE 2 - IEES ENERGY SAVINGS ESTIMATE

4/1/79 - 6/30/79 (2nd Quarter 1979)

Actual Annual Savings (10^9 BTU's)

<u>Industry Group</u>	<u>Audits</u>	<u>Workshops</u>	<u>Basis</u>	<u>Expansion Factor¹</u>	<u>Expanded Total²</u>
General	2.09	609.07	611.16	3.954	3027.69
Food	9.2	0	9.2	3.954	45.58
Textiles	0	160.76	160.76	3.954	796.41
Chemicals	0	0	0	3.954	0
Stone, Clay & Glass	87.23	229.09	316.32	3.954	1567.05
TOTALS	98.52	998.92	1097.44	---	5436.73

¹ Expansion Factor = employment ratio x dilution factor. For this period, the employment ratio is 19.77 and the dilution factor is .20.

² Equals basis x (1 + expansion factor)

TABLE 3 - IEES Energy Savings Estimate

8/1/77 - 6/30/79

Actual Annual Savings (10⁹ BTU's)

<u>Industry Group</u>	<u>Estimate through 1st Quarter 1979¹</u>	<u>Estimated 2nd Quarter 1979²</u>	<u>Cumulative Estimate Through 2nd Quarter 1979</u>
General	2,269.66	3,027.69	5,297.35
Food	428.57	45.58	474.15
Textiles	1,564.64	796.41	2,361.05
Chemicals	2,797.01	0	2,797.01
Stone, Clay & Glass	3,959.85	1,567.05	5,526.9
	<hr/>	<hr/>	<hr/>
TOTALS	11,019.73	5,436.73	16,456.46

1. Reported in April, 1979 memorandum from D. J. Coughlin to W. G. Moran.

2. Shown in Table 2 of this report.

TECHNOLOGY APPLICATIONS LABORATORY

Acting Director: R. S. Combes
Lab Secretary: R. E. Miller

ENERGY CONSERVATION DIVISION

Chief: W. G. Moran
Secretary: R. E. Miller
D. L. Mappin

APPLIED ENGINEERING DIVISION

Chief: R. S. Combes
Secretary: D. E. Hanks

CONSERVATION TECHNOLOGY GROUP

Leader: W. A. Hendrix

L. P. Fisher
D. T. Reed
G. W. Richardson

TECHNOLOGY TRANSFER GROUP

Leader: D. J. Coughlin

R. F. Farrow
J. B. Shaw
J. B. Kirk

ENERGY SYSTEMS GROUP

Leader: W. W. Carr

W. B. Boykin
W. H. Nolte

SOLAR APPLICATIONS GROUP

Leader: J.L. Clark

W. D. Holcombe
S. Robertson

AGRICULTURAL TECHNOLOGY GROUP

Leader: R.D. Atki

G. M. Battaglia
A. D. Jape
L. J. Moriarty

APPLIED OPERATIONS RESEARCH GROUP

Leader: J. J. Owen

C. L. Aton
J. C. Wyvill

REHABILITATIVE ENGINEERING GROUP

Leader: G. W. Kelly



Georgia Institute of Technology

ENGINEERING EXPERIMENT STATION

ATLANTA, GEORGIA 30332

September 28, 1979

Mr. Ed Bistany
Georgia Office of Energy Resources
Trinity-Washington Building
270 Washington Street
Atlanta, Georgia

Subject: Industrial Energy Extension Program
Quarterly Progress Summary Report for
EES/GIT Research Project A-2362 for
Period 1 July 1979 through 30 Sept. 1979

Dear Mr. Bistany:

This summarizes activities on Research Project A-2362 for the third quarter of 1979.

Program Goals for the Quarter

1. Develop and document case studies and special reports on specific technology areas as scheduled.
2. Continue technical assistance program and industrial energy audits as requested.
3. Develop programs and materials for workshops and conferences as scheduled.
4. Conduct 7 workshops as follows:
 - A. Boiler Efficiency, Macon, July 12, 1979
 - B. Food Industry, Atlanta, August 15, 1979
 - C. Chemical Industry, Atlanta, August 21, 1979
 - D. Solid Fuels Technology, Macon, September 6, 1979
 - E. Heat Recovery, Atlanta, September 13, 1979
 - F. General Industrial Conservation Technology, Gainesville, September 18, 1979
 - G. Control Systems, Atlanta, September 25, 1979
5. Print and mail September issue of the Conserver.
6. Continue work on life cycle cost computer program and other programs for use in evaluating industrial energy conservation measures.

Program Accomplishments for the Quarter

1. Statistics by groups:

	<u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemical</u>	<u>Stone</u>	<u>Total</u>
No. of industries contacted:	10	15	2	15	8	50
No. of plants visited:	9	14	7	0	5	35
No. of new plants visited to which work has been initiated:	8	7	3	0	4	22
No. of unsolicited requests:	9	6	2	2	3	22
No. of reports sent:	4	0	13	1	0	18
No. of case studies:	1	0	0	0	0	1

2. Workshop statistics:

A. As per Table 1 attached.

B. For various reasons the following alterations were made to the workshop schedule:

- General Industrial Conservation Technology workshop, Gainesville, September 18, 1979 was added.
- Textile Batch Dyeing Seminar, Atlanta, November has been added.
- Textile Continuous Dyeing Seminar, Atlanta, has been moved from September 27 to December 13, 1979.
- Heat Recovery workshop, Macon, October 4 has been cancelled and Heat Recovery, Augusta, has been switched from November 13 to November 8, 1979.
- Second Control Systems workshop, October 16, has been cancelled and third Control Systems workshop has been moved to Savannah, November 15, 1979.
- Two additional Boiler Efficiency workshops will be presented in November or December to accommodate OER request.

3. Began planning work on 11 workshops to be presented next quarter with appropriate coordination of civic and trade associations.
4. September issue of Conserver mailed to approximately 6000 industries and updating of IEES mailing list.
5. Established an IEES energy library system.
6. Continued development of IEES Energy Tips (total is now 31).
7. Technical assistance to City of Atlanta Water Works -- boiler and steam distributor operation.
8. Continued technical assistance with industry and issued addendum reports to plants already visited.

9. Incorporation of Georgia Tech Energy Van into IEES efforts.
10. Attendance of 2 IEES members at Energy Conservation and the Second Law of Thermodynamics conference in August.
11. Addition of three new personnel -- Steve Coursey, Larry Banta and Rachel Moore. John Owen has left Georgia Tech and IEES and Robin Farrow is on temporary leave for three months.
12. Began preparation of 1980 program plan and budget.
13. Continued contract development activities on expansion of IEES -- T.V.A., Southern Solar, etc.
14. IEES engineers were involved in a great deal of technology transfer and promotional efforts including:
 - Georgia Power Energy Conservation Workshop, 7/26/79
 - Georgia Power New Energy Services Engineer Indoctrination, 8/7/79
 - Consulting Engineers Council of Georgia Dinner, 9/13/79
 - American Institute of Plant Engineers Dinner, 9/20/79
 - Five (5) Kiwanis and Rotary Club meetings
 - GTMA meeting, 8/38/79
 - 14th Intersociety Energy Conversion Engineering Conference, 8/10/79
 - Various radio, T.V. and sales meeting appearances
 - Submitted articles to Textile World magazine.
 - Have received requests for papers from TAPPI and IEEE.
15. Have briefed various divisions of DOE on the IEES program. Mrs. Mary Corrigan of the Technology Implementation Branch in Conservation and Solar Applications attended our Food Workshop on August 15. She was impressed with our program and expressed interest in future funding.

Milestones Met During the Quarter

1. Evaluated results of IEES program for third quarter 1979 (see attachment.) Actual Energy Savings by Georgia industries was 7.47×10^{12} BTU which gives a year to date savings of 16.35×10^{12} BTU and a cumulative total program savings of 23.92×10^{12} BTU. (savings goal for 1979 is 18.0×10^{12} BTU).
2. Presented 7 workshops and sent 18 reports to industry.

Major Activities

The major emphasis during this quarter was on workshop presentations and technology transfer. Work has continued on technical assistance and energy audits as requested from Georgia industries.

We have seen tremendous results from our promotional efforts -- workshop interest and attendance has been good and requests for other speaking engagements and technical assistance have been plentiful.

Several industrial energy conservation topics of interest have been identified, such as alternate fuels (wood, solar, gasahol). IEES personnel have been gathering and disseminating data on these topics and coordinating requests with existing State and Georgia Tech programs.

Respectfully submitted,

William G. Moran
Program Coordinator

WGM/mro

Attachments

William G. Moran
Division Chief

Table 1 - IEES Workshops Conducted and Evaluated

7/1/79 - 9/30/79 (3rd Quarter 1979)

<u>Location</u>	<u>Workshop Date</u>	<u>Topic</u>	<u>No. of Attendees</u>	<u>Total No. Of SIC Companies Represented</u>	¹ No. of Adjusted SIC Companies by Industry Group				
					² <u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemicals</u>	<u>Stone, Clay & Glass</u>
Macon	7/17/79	Boiler Efficiency	65	25	5/2	4/1	7/3	4/2	1/1
Atlanta	8/15/79	Food Industry Conservation Technology	51	24	-	9/4	-	-	-
Atlanta	8/21/79	Chemical Industry Conservation Technology	13	12	-	-	-	4/2	-
Macon	9/6/79	Solid Fuels Technology	31	18	6/2	1/1	2/1	-	2/1
TOTALS			160	79	11/4	14/6	9/4	8/4	3/2

¹Adjusted SIC Companies column excludes plants which have received IEES in-plant audits or technical assists.

²Convention adopted here is: No. of plants represented / No. of plants contacted by phone for survey.

The following workshops were also conducted, with no savings evaluation, due to their recent occurrence:

<u>Location</u>	<u>Workshop Date</u>	<u>Topic</u>	<u>No. of Attendees</u>
Atlanta	9/13/79	Heat Recovery	27
Gainesville	9/18/79	General Industrial Conservation Technology	26
Atlanta	9/25/79	Control Systems	17
TOTALS			70

Total 7 Workshop Attendance = 230

TABLE 2 - IEES ENERGY SAVINGS ESTIMATE

7/1/79 - 9/30/79 (3rd Quarter 1979)

Actual Annual Savings (10⁹ BTU's)

<u>Industry Group</u>	<u>Audits</u>	<u>Workshops</u>	<u>Basis</u>	<u>Expansion Factor</u> ¹	<u>Expanded Total</u> ²
General	19.67	329.4	349.07	4.243	1830.18
Food	.417	2.77	3.187	4.243	16.71
Textiles	45.5	73.1	118.6	4.243	621.82
Chemicals	76	824	900	4.243	4718.7
Stone, Clay & Glass	<u>5.39</u>	<u>47.8</u>	<u>53.19</u>	<u>4.243</u>	<u>278.88</u>
TOTALS	146.98	1277.07	1424.05	-	7466.29

¹Expansion Factor = employment ratio x dilution factor. For this period, the employment ratio is 16.97 and the dilution factor is .25.

²Equals basis x (1 + expansion factor)

TABLE 3 - IEES Energy Savings Estimate

8/1/77 - 9/30/79

Actual Annual Savings (10⁹ BTU's)

<u>Industry Group</u>	<u>Estimate through 2nd Quarter 1979¹</u>	<u>Estimated 3rd Quarter 1979²</u>	<u>Cumulative Estimate Through 3rd Quarter 1979</u>
General	5,297.35	1,830.18	7,127.53
Food	474.15	16.71	490.86
Textiles	2,361.05	621.82	2,982.87
Chemicals	2,797.01	4,718.7	7,515.71
Stone, Clay & Glass	<u>5,526.9</u>	<u>278.88</u>	<u>5,805.78</u>
TOTALS	16,456.46	7,466.29	23,922.75

1. Reported in July, 1979 memorandum from D. J. Coughlin to W. G. Moran

2. Shown in Table 2 of this report.

Georgia Institute of Technology

ENGINEERING EXPERIMENT STATION

ATLANTA, GEORGIA 30332

January 8, 1980

Mr. Ed Bistany
Georgia Office of Energy Resources
Trinity-Washington Building
270 Washington Street
Atlanta, Georgia

Subject: Industrial Energy Extension Program
Quarterly Progress Summary Report for
EES/GIT Research Project A-2362 for
Period, 1 October 1979 through
31 December 1979

Dear Mr. Bistany:

This summarizes activities on Research Project A-2362 for the fourth quarter of 1979.

Program Goals for the Quarter

1. Develop and document case studies and special reports on specific technology areas as scheduled.
2. Continue technical assistance program and industrial energy audits as requested.
3. Conduct evaluation of 1979 program and develop program plan for 1980.
4. Conduct 10 workshops as follows:
 - Solid Fuels Technology, Augusta, October 16, 1979
 - Stone, Clay, and Glass Industry, Atlanta, October 25, 1979
 - Waste Heat Recovery, Augusta, November 8, 1979
 - Control Systems, Savannah, November 15, 1979
 - Stone, Clay, and Glass Industry, Macon, December 4, 1979
 - Boiler Efficiency, Atlanta, December 4, 1979
 - Chemical Industry, Augusta, December 11, 1979
 - Textile Industry, Atlanta, December 13, 1979
 - Two additional Boiler workshops at OER's request
5. Print and mail November issue of the Conserver.
6. Continue work on computer programs for use in evaluating industrial energy conservation measures.

7. Coordinate efforts of ARC energy conservation project with IEES.

Accomplishments for the Quarter

1. Statistics by groups:

	<u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemical</u>	<u>Stone</u>	<u>Total</u>
No. of industries con-						
tacted:	9	14	2	20	9	54
No. of plants visited:	6	13	3	3	8	33
No. of new plants						
visited to which work	6	2	0	0	6	14
has been initiated:						
No. of unsolicited						
requests	5	8	3	2	4	22
No. of reports sent:	4	6	14	13	4	41
No. of case studies:	2	0	0	0	0	2

2. Workshop statistics:

- A. As per Table 1 attached

- B. The following alterations were made to the workshop schedule for the fourth quarter:

- Two extra Boiler Efficiency workshops were rescheduled for 1980 at the request of O.E.R.

3. Completed and received approval on 1980 IEES program plan.
4. November issue of Conserver mailed to approximately 6000 industries.
5. IEES presentation at DOE meeting for state programs, December 1979, Sante Fe, New Mexico.
6. IEES Savings Evaluation presentation at DOE meeting for state programs (Southeast), October 1979, Atlanta.
7. Coordinated tasks of related state energy conservation projects with IEES (ARC, Southern Solar).
8. IEES engineers were involved in various presentations of results and promotional efforts including:
 - American Institute of Industrial Engineers Annual Dinner
 - American Society of Civil Engineers (Georgia Chapter) Annual Meeting
 - Rotary Club of Douglas, Hartwell, Toccoa, and Cartersville

Milestones Met During the Quarter

1. Evaluated results of IEES program for fourth quarter 1979 (see attachment). Actual energy savings by Georgia industries was 10.5×10^{12} BTU which gives a year-to-date savings of 26.85×10^{12} BTU and a cumulative total program savings of 34.43×10^{12} BTU and \$87.2 million (cumulative goal to date is 24.5×10^{12} BTU).
2. Presented 8 workshops and sent 41 reports to industry.

Major Activities

The major emphasis during this quarter was in three areas:

- workshops and technology transfer
- in-plant assistance and energy audits
- follow-up and evaluation of previous in-plant work.

We have seen an encouraging increase in interest to IEES based on the number of unsolicited requests and workshop attendance. The program results to date have surpassed the established goals and we anticipate even greater results in 1980. Actual energy savings are just now being accrued on some of our earlier suggestions which required long lead times.

IEES personnel have incorporated the experience gained over the first two years of this program, as well as, input from Georgia industries into the 1980 work plan.

Respectfully submitted, .

William G. Moran
Program Coordinator

William G. Moran
Division Chief

WGM/mro

Attachments

Table 1 - IEES Workshop Conducted and Evaluated

10/1/79 - 12/31/79 (4th Quarter 1979)

¹No. of Adjusted SIC Companies
by Industry Group

<u>Location</u>	<u>Workshop Date</u>	<u>Topic</u>	<u>No. of Attendees</u>	<u>Total No. of SIC Companies Represented</u>	<u>General</u>	<u>Food</u>	<u>Textiles</u>	<u>Chemicals</u>	<u>Stone, Clay & Glass</u>
Augusta	10-16-79	Solid Fuels Technology	14	5	3/1	-	-	-	-
Atlanta	10-25-79	Stone, Clay, Glass Conservation Technology	7	4	-	-	-	-	2/1
Augusta	11-13-79	Waste Heat Recovery	10	7	3/1	-	-	-	1/1
Savannah	11-15-79	Control Technology	<u>13</u>	<u>4</u>	<u>1/1</u>	<u>-</u>	<u>-</u>	<u>2/2</u>	<u>-</u>
TOTALS			44	20	7/3	0/0	0/0	2/2	3/2

¹Adjusted SIC Companies column excludes plants which have received IEES in-plant audits or technical assists.²Convention adopted here is: No. of plants represented / No. of plants contacted by phone for survey.

The following workshop was omitted from the second quarter 1979 totals:

Atlanta 6-19-79 Emerging Technology 39

The following workshops were also conducted, with no savings evaluation, due to their recent occurrence:

Macon 12-4-79 Stone, Clay, and Glass Conservation Technology 23

Atlanta 12-4-79 Boiler Efficiency 78

Augusta 12-11-79 Chemical Industry Conservation Technology 18

Atlanta 12-13-79 Textile Continuous Processing Conservation Technology 39

TOTALS 158

Total 9 Workshop Attendance = 241

TABLE 2 - IEES ENERGY SAVINGS ESTIMATE

10/1/79 - 12/31/79 (4th Quarter 1979)

Actual Annual Savings (10^9 BTU's)

<u>Industry Group</u>	<u>Audits</u>	<u>Workshops</u>	<u>Basis</u>	<u>Expansion Factor</u> ¹	<u>Expanded Total</u> ²
General	1.82	1776	1777.8	3.608	8192.1
Food	59.9	0	59.9	3.608	276.0
Textiles	267.7	0	267.7	3.608	1233.6
Chemicals	0	0	0	3.608	0
Stone, Clay & Glass	<u>60.2</u>	<u>113.6</u>	<u>173.8</u>	<u>3.608</u>	<u>800.9</u>
TOTALS	388.1	1889.6	2277.7	-	10502.6

¹Expansion Factor = employment ration x dilution factor. For this period, the employment ratio is 18.04 and the dilution factor is .20.

²Equals basis x (1 + expansion factor)

TABLE 3 - IEES Energy Savings Estimate

8/1/77 - 12/31/79

Actual Annual Savings (10⁹ BTU's)

<u>Industry Group</u>	<u>Estimate through 3rd Quarter 1979¹</u>	<u>Estimated 4th Quarter 1979²</u>	<u>Cumulative Estimate Through 4th Quarter 1979</u>
General	7127.53	8192.1	15319.63
Food	490.86	276.02	766.86
Textiles	2982.87	1233.6	4216.47
Chemicals	7515.71	0	7515.71
Stone, Clay & Glass	<u>5805.78</u>	<u>800.9</u>	<u>6606.68</u>
TOTALS	23922.75	10502.6	34425.35

1. Reported in September, 1979 memorandum from D. J. Coughlin to W. G. Moran

2. Shown in Table 2 of this report.

Full

DATE May 24, 1979

EXHIBIT C

MONTH: April, 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
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26,026.57

26,026.57

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

Title: Manager, Accounting & Budgets

Energy Resources - by _____ Date _____

Administrative Office - by _____ Date _____

A-2362
E-18-619
E-19-681
E-27-678

DATE June 15, 1979

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 2

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: May, 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>18,129.17</u>	<u>32,034.08</u>
II. Fringe Benefits	<u>1,554.39</u>	<u>2,886.53</u>
III. Travel*	<u>973.64</u>	<u>1,041.79</u>
IV. Publications	<u>-</u>	<u>-</u>
V. Overhead	<u>13,778.17</u>	<u>24,345.90</u>
VI. Materials and Supplies	<u>3,286.42</u>	<u>3,440.06</u>
VII. Other	<u></u>	<u></u>

Amount Requested for
Reimbursement this
Month

37,721.79

Total Expenditures To-Date

63,748.36

*Supporting documentation available for review
and audit upon request.

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by

Date

Administrative Office - by

Date

DATE July 13, 1979

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 3

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: June 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>19,834.63</u>	<u>51,868.71</u>
II. Fringe Benefits	<u>1,694.20</u>	<u>4,580.73</u>
III. Travel*	<u>980.25</u>	<u>2,022.04</u>
IV. Publications	<u>--</u>	<u>--</u>
V. Overhead	<u>15,074.31</u>	<u>39,420.21</u>
VI. Materials and Supplies	<u>4,319.80</u>	<u>7,759.86</u>
VII. Other (Computer)		

Amount Requested for
Reimbursement this
Month

41,903.19

Total Expenditures To-Date

105,651.55

*Supporting documentation required, to include at least an itemized listing of costs submitted.

Attached

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by Date

Administrative Office - by _____ Date _____

FINANCIAL STATEMENT AND INVOICE NO. 4

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: July 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>15,344.94</u>	<u>67,213.65</u>
II. Fringe Benefits	<u>1,357.45</u>	<u>5,938.18</u>
III. Travel*	<u>700.67</u>	<u>2,722.71</u>
IV. Publications	<u>--</u>	<u>--</u>
V. Overhead	<u>11,662.15</u>	<u>51,082.36</u>
VI. Materials and Supplies	<u>1,520.08</u>	<u>9,279.94</u>
VII. Other (Computer)	<u></u>	<u></u>
Amount Requested for Reimbursement this Month	30,585.29	

Total Expenditures To-Date	136,236.84
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*Supporting documentation available for review and audit upon request.

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by _____ Date _____

Administrative Office - by _____ Date _____

DATE September 20, 1979

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 5

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: August 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	20,554.32	87,767.97
II. Fringe Benefits	1,866.56	7,804.74
III. Travel*	1,159.30	3,882.01
IV. Publications	--	--
V. Overhead	15,621.29	66,703.65
VI. Materials and Supplies	7,063.04	16,342.98
VII. Other XXXXXX		
Amount Requested for Reimbursement this Month	46,264.51	

Total Expenditures To-Date	182,501.35
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*Supporting documentation required, to include at least an itemized listing of costs submitted.

Attached

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by _____ Date _____

A-2362
E-18-619
E-19-681
E-27-678

DATE October 15, 1979

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 6

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: September 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>20,911.15</u>	<u>108,679.12</u>
II. Fringe Benefits	<u>1,915.61</u>	<u>9,720.35</u>
III. Travel*	<u>808.60</u>	<u>4,690.61</u>
IV. Publications	<u>-0-</u>	<u>-0-</u>
V. Overhead	<u>15,892.47</u>	<u>82,596.12</u>
VI. Materials and Supplies	<u>3,695.46</u>	<u>20,038.44</u>
VII. Other	<u></u>	<u></u>
Amount Requested for Reimbursement this Month	<u>43,223.29</u>	
Total Expenditures To-Date		<u>225,724.64</u>

*Supporting documentation available for review
and audit upon request.

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by Date

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 7CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTEMONTH: October 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>24,628.28</u>	<u>133,307.40</u>
II. Fringe Benefits	<u>2,424.93</u>	<u>12,145.28</u>
III. Travel*	<u>1,363.89</u>	<u>6,054.50</u>
IV. Publications	<u>-0-</u>	<u>-0-</u>
V. Overhead	<u>18,717.49</u>	<u>101,313.61</u>
VI. Materials and Supplies	<u>4,442.49</u>	<u>24,480.93</u>
VII. Other	<u> </u>	<u> </u>
Amount Requested for Reimbursement this Month	<u>51,577.08</u>	
Total Expenditures To-Date		<u>277,301.72</u>

* Supporting documentation available for review
and audit upon request.

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. AtchesonTitle: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by Date Administrative Office - by Date

-18-619
-19-681
-27-678

DATE December 18, 1979

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 8

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: November 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>26,372.13</u>	<u>159,679.53</u>
II. Fringe Benefits	<u>2,568.79</u>	<u>14,714.07</u>
III. Travel*	<u>1,125.35</u>	<u>7,179.85</u>
IV. Publications	<u>-0-</u>	<u>-0-</u>
V. Overhead	<u>20,042.81</u>	<u>121,356.42</u>
VI. Materials and Supplies	<u>3,729.37</u>	<u>28,210.30</u>
VII. Other	<u></u>	<u></u>
Amount Requested for Reimbursement this Month	<u>53,838.45</u>	

Total Expenditures To-Date 331,140.17

*Supporting documentation available for review and audit upon request.

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by Date

Administrative Office - by Date

A-2362
E-18-619
E-19-681
E-27-678

DATE January 16, 1980

EXHIBIT C
FINANCIAL STATEMENT AND INVOICE NO. 9

CONTRACTOR: GEORGIA TECH RESEARCH INSTITUTE

MONTH: December 1979

OBJECT CLASS CATEGORIES	CURRENT MONTH	TOTALS TO-DATE
I. Personnel	<u>23,970.47</u>	<u>183,650.00</u>
II. Fringe Benefits	<u>2,341.34</u>	<u>17,055.41</u>
III. Travel*	<u>1,349.96</u>	<u>8,529.81</u>
IV. Publications	<u>-0-</u>	<u>-0-</u>
V. Overhead	<u>18,217.55</u>	<u>139,573.97</u>
VI. Materials and Supplies	<u>2,189.97</u>	<u>30,400.27</u>
VII. Other (Computer)	<u> </u>	<u> </u>
Amount Requested for Reimbursement this Month	<u>48,069.29</u>	

Total Expenditures To-Date

379,209.46

*Supporting documentation required, to include at
least an itemized listing of costs submitted.

Attached

I certify that the above statement of services rendered, having been compiled from bonafide time, salary and overhead cost records maintained by the Engineering Experiment Station is true and correct to the best of my knowledge and belief; and that reimbursement for the particular services and products indicated above has not been received.

B. H. Atcheson

Title: Manager, Accounting & Budgets

REVIEWED, OFFICE OF PLANNING AND BUDGET:

Energy Resources - by

Date